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4.—THE DISTRIBUTION OF THE MARSUPIALS IN WESTERN AUSTRALIA.

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Since the appearance of Shortridges's "Account of the Geographical Distribution of the Marsupials and Monotremes of South-West Australia" in 1910,* distribution maps of the Western Australian Mammalian fauna have been kept up to date, and this paper is submitted to indicate the present range of the fauna, based principally upon specimens that have reached the Museum in the last ten years.

It is unavoidable that the spread of settlement and the changes it brings in its train should have a profound effect upon the native fauna, the clearing of hundreds of thousands of acres in the wheat belt has brought about some astounding results. The animals driven from their old haunts have been forced to seek an asylum elsewhere; the tracts of poison land, the State Timber reserves, and the rougher portions of the Darling Ranges have provided a home for many, whilst others, including *Tachyglossus* and *Macrotis* (*Thalacomys*), have even attempted to establish themselves near Perth where formerly they were either extremely rare or entirely absent. *Trichosurus vulpecula* and *Dasyurus geoffroyi* are often found in the roofs of suburban residences, the former taking a toll of the garden produce; the latter paying particular attention to improperly constructed fowl runs. At least 14 species are still to be met with on the coastal plain in the vicinity of Perth.

The State of Western Australia is not a faunal unit, the South-Western corner, whilst containing a number of forms peculiar to itself, shows a marked affinity to the coastal and subcoastal districts of South-Eastern Australia: a discontinuous distribution which is considered to be due to climatic changes rather than to the foundering of extensive areas of land in the Great Australian Bight.

The boundaries of this region are not at all clearly defined. In the north it extends to Geraldton with outliers on the islands of Shark Bay, whilst on the south coast it can be traced as far east as Esperance, including the islands of Recherche Archipelago. In the north the eastern boundary is fairly close to the coast, but near Moora it sweeps inland to follow fairly closely the line of No. 3 Rabbit Proof Fence in the direction of the south coast.

Broadly speaking, the headquarters of the fauna are in the karri and jarrah forests of the south-west, although it is still dominant in the mixed "salmon gum forest and sandplain," and "savannah forests and woodlands" shown in Gardner's "Vegetation Map of Western Australia," issued by the Forests Department in 1928.

* Proceedings of the Zoological Society of London, 1908, p. 803, published April, 1910.

In the extreme north of the State the greater part of the Kimberley Division is merely a western extension of the Northern Territory, several species extending from Arnhem Land to West Kimberley in the neighbourhood of the Prince Regent River and Derby.

Of special interest is the Pilbara District, comprising much of the Pilbara and West Pilbara Goldfields, several elements of this area and of the islands off its coast have their nearest relatives in Northern Australia, *Lagorchestes conspicillatus* and *Dasyurus (Satanellus) hallucatus* being forms common to both.

The rest of the State is dominated by a fauna which is strictly Eremaean in character, *Macropus rufus* occupying the plains and *M. robustus* the hilly country. In the northern portion, at least as far south as the Warburton Ranges, *Dasyercus* is to be met with, whilst *Notoryctes* almost reaches the sea coast in the vicinity of Wollal.

When dealing with the distribution and range of species, it is often assumed that a form is more or less rigidly confined to a particular area. Whilst this may be the case in an environment where the seasons and rainfall are fairly regular, as in the South-West and the Kimberleys, it does not apply to the greater part of our Eremaea. *Macropus robustus* and *Petrogale lateralis* may remain in their particular haunts to the bitter end, but the fauna of the plains will migrate many miles to reach an area where bounteous rains have provided an ample food supply. This is well illustrated by the experience of the Museum taxidermist, Mr. O. H. Lipfert, who recently accompanied the Government party reconditioning the wells on the Canning Stock Route from Wiluna to the Sturt Creek south of the Kimberley Goldfield. On the northward journey very little animal life was met with as conditions had been bad; on the other hand, during the homeward journey, animal life, including marsupials, was astonishingly abundant, heavy rains having fallen in the interval. It has also been established that, during bad seasons, animals will become mature when their size is unusually small. The range in size of animals of similar age, judged by the state of the teeth, is at times astounding—a fact which is easily overlooked by taxonomists who are not acquainted with the conditions in the field.

LIST OF THE MARSUPIALS OF WESTERN AUSTRALIA.

DIDELPHIA.

DIDACTYLOUS SECTION.

Family DASYURIDAE.

Sub-Family DASYURINAE.

Dasyurus (Dasyurinus) geoffroyi fortis, Thos.

South-Western Australia is the headquarters of this form. It is quite common near Perth, where it breeds in King's Park and in the roofs of suburban residences.

A specimen rather paler in general colouration is in the Museum collection from Well 46, Canning Stock Route, about 20 degrees 40 south and 127 degrees east.

Apparently it does not occur in the Pilbara Goldfield, where its place is taken by *Satanellus hallucatus*.

The type locality is Arthur River, near Wagin.

Dasyurus (Satanellus) hallucatus exilis, Thos.

This is the form inhabiting the Kimberley District; a related if not identical form is known from the West Pilbara Goldfield, near Roebourne. This suggests the former extension of the Kimberley fauna to the North-West Division, which is now cut off by the advance of the arid conditions to the Ninety-mile Beach. It would appear that *D. geoffroyi* is more adaptable to the change, for it occurs as far north as 20 degrees 40 south and 127 degrees east.

The type locality is Parry's Creek, near Wyndham.

Sub-Family PHASCOGALINAE.

Phascogale (Phascolosorex) apicalis, Gray.

South-Western Australia (?) country around Albany.

This species is now probably extinct; it is not represented in the collection of the W.A. Museum.

The type locality is unknown, the specimen having been purchased of Mr. Brandt by the trustees of the British Museum.

Phascogale (Antechinus) flavipes leucogaster, Gray.

Lower South-West from Pinjarra to Cape Riche.

Said to prefer stony country. Still occurring sparsely in suitable stony or rocky surroundings throughout the area.

The type locality is Canning River, a tributary of the Swan.

Phascogale calura, Gould.

Lower South-West from Narrogin to Kojonup.

Seems to be rather rare, six specimens only having reached the Museum within the last five years.

The type locality is the Williams River in the South-West.

Phascogale penicillata penicillata, Shaw.

South-West from Fremantle to the South Coast and inland to Merredin. Far more abundant than the preceding 20 specimens received in the last five years.

Type locality presumably in New South Wales.

Phascogale penicillata pirata, Thos.

Kimberley, Napier Broome Bay, near Drysdale River, and Port George IV.

The type locality is South Alligator River in the Northern Territory.

Planigale subtilissima, Lönnberg.

West Kimberley.

Type locality, plain near Noonkambah on the Fitzroy River north of the St. George Range.

Dasymercus cristicauda, Krefft.

Eastern Division (Canning Stock Route).

One of the commonest mammals along the stock route from Wiluna to Hall's Creek, its southern limit being near Well 26. The distribution is governed by the state of the season (wet or dry).

The type locality is South Australia, probably near Lake Alexandria.

Dasymercus blythi, Waite.

Pilbara Goldfield.

Little is known about this animal. Reports received suggest that it has a fairly wide range in the North-Western Division of the State.

The type locality is Pilbara district.

Sminthopsis murina albipes, Waterhouse.

South-Western Australia, more or less coastal, but inland to Katanning, Broomehill, Gnowangerup, and Bulong, near Kalgoorlie. A very common species in the South-West.

All the specimens seen have the carpal pad on the manus transversely striated, not granular. The scaly tail is uniformly covered with short hairs, which are brownish, or brownish mixed with whitish ones above and uniformly whitish below.

Type locality Port Adelaide, South Australia.

Sminthopsis longicaudatus, Spencer.

This species does not seem to have been recorded since its original discovery, and we have no information about the type locality beyond Spencer's vague "West Australia."

Sminthopsis crassicaudata crassicaudata, Gould.

Southern part of Western Australia from Day Dawn to the South coast.

At Dongarra, and near Perth, it has at times been found on the coastal plain, although its usual western limit is the escarpment of the Darling Range.

A very common species.

The type is from the Williams River, South-Western Australia.

Sminthopsis granulipes, Troughton.

A rare form occurring here and there in the South-West of the State.

Specimens in the W.A. Museum are from Nungarin and from a locality 30 miles east of Ravensthorpe—the latter, a female, had 12 young in its pouch.

The type locality is King George's Sound, South-Western Australia.

Sminthopsis froggatti, Ramsay.

West Kimberley.

The type was found under debris near the beach in pindan scrub bordering King Sound, near Derby.

Sminthopsis larapinta, Spencer.

The Museum has specimens from "Central Australia," Alexandria, and Tanami, in the Northern Territory. The animal probably exists in East Kimberley, as Tanami is not far across the border.

The type locality is Charlotte Waters.

Sminthopsis hirtipes, Thos.

Central portion of W.A.

Specimens from Well 29 on the Canning Stock Route and Winduldarra 26 degrees 30 minutes south, 126 degrees 6 minutes east are in the collection of the W.A. Museum. The type locality is Station Point, Charlotte Waters.

Family MYRMECOBIIDAE.

Myrmecobius fasciatus, Waterhouse.

Southern portion of Western Australia from Darling Range in the west to Kalgoorlie in the east; northward to Laverton and southward to the country near Albany.

A specimen is in the W.A. Museum from Armadale, near Perth.

The clearing of the country for agriculture has affected the animal adversely.

The type locality is 90 miles south-east of the mouth of the Swan River, *i.e.*, in the vicinity of Mt. Kokeby.

Family NOTORYCTIDAE.

Notoryctes caurinus, Thos.

In sandy desert country along the Canning Stock Route and inland from Wallal.

Type locality near Wallal on the Ninety-Mile Beach, North-Western Australia.

SYNDACTYLOUS SECTION.

POLYPROTODONT GROUP.

Family PERAMELIDAE.

Isodon obesulus, Shaw.

South-Western Australia, inland to Broomehill and Cranbrook.

Still plentiful even near Perth if environment is suitable.

The type locality is New South Wales.

Isoodon auratus, Ramsay.

Kimberley district from the Drysdale River in the north to Well 31 on the Canning Stock Route 22 degrees 30 minutes south; was once common near Broome.

The type locality is Derby on King Sound, West Kimberley.

Isoodon barrowensis, Thos.

Barrow Island, off Onslow.

Type locality, Barrow Island.

Isoodon macrourous, Gould.

Kimberley District, apparently rare.

The type locality is Port Essington, Northern Territory.

Perameles bougainvillei bougainvillei, Q. & G.

Dorre and Bernier Islands and adjacent mainland. (Onslow 9826.)

Assumed to be extinct (G. C. Shortridge), but subsequently found to be still fairly common.

Type locality, Peron Peninsula, Shark Bay.

Perameles myosura, Wagner.

South-Western Australia, near Cranbrook.

No specimens have reached the Museum since 1900. It is therefore assumed that the animal is extinct.

The type locality is Swan River.

Perameles eremiana, Spencer.

Central District, west of Warburton Ranges.

Said to be common at the time the specimen in the W.A. Museum was collected.

The type locality is in Central Australia—"Burt Plains, north of Alice Springs," and "sandhills about 40 miles north-east of Charlotte Waters," provided the specimens upon which the original description is based.

Macrotis lagotis, Reid.

Widely distributed in the State south of the Kimberley Division. The western limit seems to be the Darling Range, although the Museum has odd specimens from Perth and Upper Swan on the Coastal Plain. The animal occurs as far south as Cranbrook and Jerramungup, near the Stirling Range, and as far east as Gnawlbart, 126 degrees 15 minutes east, 26 degrees 21 minutes south. Within this extensive range the animal varies irregularly in size, cranial characters and colouration. It is not possible to distinguish satisfactory geographical races or sub-species when large series (over 40 specimens) are studied.

The type locality is "Swan River."

Choeropus ecaudatus, Ogilby.

Once abundant in parts of the interior, now seemingly on the verge of extinction in Western Australia.

No specimen in the Museum.

Mr. A. Le Souef states in a letter 2/12/1927 that he has seen a dried skin at Rawlinna. This is the only recent record known to me.

The type locality is Murray River, South Australia.

DIPROTODONT GROUP.

Family PHALANGERIDAE.

Sub-Family PHASCOLARCTINAE.

Pseudochirus occidentalis, Thomas.

Lower South-Western Australia in small isolated colonies which suggest that the animal is on the verge of extinction through natural causes.

The type locality is King George's Sound, South-Western Australia.

Sub-Family PHALANGERINAE.

Dromicia (Dromiciella) concinna, Gould.

Southern portion of the State from Sandstone in the north to the South Coast. Specimens have been collected as far east as Balladonia and Bulong, near Kalgoorlie.

Still a very common species, even close to Perth.

The co-types are from "Swan River, W.A."

Petaurus (Petaurula) breviceps, Waterhouse.

Kimberley District. A single specimen (mounted) from Roebourne is in the Museum collection, but it is not at all certain that the animal was collected in that locality. It does not seem to occur there to-day, as far as can be ascertained.

The types are from New South Wales.

Wyulda squamicaudata, Alexander.

East Kimberley in mountainous country, near Turkey Creek. The animal seems to resemble *Ps. dahli* in its habits, being terrestrial, not arboreal.

The type locality is Violet Valley Station, near Turkey Creek.

Trichosurus vulpecula vulpecula, Kerr.

Southern W.A. as far north as Sholl Creek, 26 degrees south, near Lake Carnegie.

Still very plentiful in the South-West, even near Perth. At one time it inhabited all parts of the State south of the tropics where trees were to be found, but to-day its distribution is much restricted, for which both natural and human agencies are responsible.

In Western Australia the variations are such that only two satisfactory sub-species can be separated—that inhabiting the Kimberley District being characterised by certain constant features.

Trichosurus vulpecula arnhemensis, Collet.

Kimberley District, as far south as Well 43, Canning Stock Route, about 21 degrees south.

The co-types were collected at Daly River and Katherine River, Northern Territory.

Sub-Family TARSIPEDINAE.

Tarsipes spenserae, Gray.

South-Western Australia from the Irwin River south of Geraldton to the south coast as far east as Esperance.

Usually more or less coastal, but has been found along the Great Southern as far north as Wagin, and at Nyabing east of Katanning.

The animal still occurs close to Perth in suitable localities. The type locality is King George's Sound, which is still the headquarters of the species.

Family MACROPODIDAE.

Sub-Family POTOROINAE.

Bettongia penicillata, Gray.

South-Western Australia, from Perth southward, is found in the coastal area as well as inland to the Great Southern and beyond.

The type of the species came from New South Wales.

Bettongia (Bettongiops) lesueuri lesueuri, Q. & G.

Dirk Hartog Island, Bernier and Dorre Islands in Shark Bay. Years ago the animal was common near Roebuck Bay (Broome), where K. Dahl obtained numerous specimens.

The type locality is Dirk Hartog Island, Shark Bay.

Bettongia (Bettongiops) lesueuri grayi, Gould.

This species, which was once very common in the interior, is now confined to the Great Southern area between Beverley in the north and Kojonup in the south. The favourite environment would seem to be supplied by "sandplain country," where burrowing is fairly easy. It is the "Kangaroo Rat" of early colonists of Swan River Colony.

The type locality is "Swan River."

Potorous gilberti, Gould.

The extreme south of South-Western Australia. Possibly extinct.

The type is from King George Sound, skulls are not uncommon in the caves of the Margaret River district, south-west of Busselton.

Potorous (Potoroops) platyops, Gould.

South-Western Australia. Possibly extinct.

The type locality is Walyema Swamps, about 40 miles N.E. of Northam; the animal is also recorded from Albany.

A single specimen from the Margaret River was sent to the London Zoological Society in 1908. This suggests that the species still exists in that area.

Sub-Family MACROPODINAE.

Lagostrophus fasciatus fasciatus, Per. & Les.

Dirk Hartog, Dorre and Bernier Islands in Shark Bay; not common.

The original specimens came from these islands and the species was not seen elsewhere by Peron and his companions.

Lagostrophus fasciatus albipilis, Gould.

South-Western Australia in a few isolated localities to the east of the Great Southern Railway; rare.

The type was collected near York by Preiss.

Lagorchestes conspicillatus conspicillatus, Gould.

Barrow Island (type locality), and formerly also on Trimouille I. of Montebello Group, north of Onslow.

Lagorchestes conspicillatus leichardti, Gould.

West Kimberley.

The original specimens were collected on Dr. Leichardt's "trip from Moreton Bay to Port Essington."

Lagorchestes hirsutus hirsutus, Gould.

Interior of the State. It has long disappeared from the York district, where the first specimens were collected by Gilbert, but survives in the desert country near the South Australian border, and along the Canning Stock Route. It is doubtful whether the island forms from Dorre and Bernier Islands are valid sub-species. Known as "Spinifex Rat" by pastoralists.

The type locality is the York district, where the animal has long disappeared.

Lagorchestes hirsutus dorrae, Thos.

Dorre Island, in Shark Bay, perhaps also on Dirk Hartog Island.

It is doubtful whether this and the succeeding sub-species can stand when compared with extensive series of the typical form from the mainland.

Lagorchestes hirsutus bernieri, Thos.

Bernier Island, Shark Bay.

Peradorcas concinna monastria, Thos.

North Kimberley, Napier Broome Bay and Drysdale River.

The type locality is Napier Broome Bay.

Petrogale lateralis, Gould.

Throughout the State, from the southern portion of the Kimberley Division in the north to the south coast in suitable localities; also on Barrow Island (specimen 2891), and Depuch Island off the coast between the Ashburton and the Yule Rivers.

Apparently now rare in the settled districts of the South-West and Wheat Belt.

The lectotype was collected by Gilbert at "Swan River." B.M. 42.5.26.3.

Petrogale hacketti, Thomas.

Recherche Archipelago, off Esperance on the South Coast. The islands upon which the animal occurs are Mondrain Island and Coombe Island, the former being the type locality.

A specimen (8614) from Lucky Bay, east of Esperance, was considered by O. Thomas to belong to this species.

Petrogale rothschildi, Thomas.

North-West of W.A. Cossack River and Nicol Bay, near Roebourne.

Apparently inhabiting a very limited area, as the common species occurs at Nullagine further east, and at Point Cloates to the south-west.

The type locality is Cossack River.

The vinous patch disappears in course of time on preserved skins, in spite of every care to exclude air and light.

Petrogale brachyotis brachyotis, Gould.

Kimberley District.

Type locality Hanover Bay.

In a letter Mr. Thomas expressed the opinion that *P. inornata*, Gld., is a synonym. See also Cat. Mars. Mon., B.M., p. 71.

Onychogalea lunata, Gould.

South-Western Australia, in isolated localities to the west of the lower Great Southern Railway, probably on the verge of extinction in the settled districts, but surviving further east towards the Great Victoria Desert.

The type specimen was collected by Gilbert at "Swan River."

Onychogalea unguifera, Gould.

West Kimberley as far south as Sturt Creek.

The type locality is Fitzroy River District, West Kimberley.

Macropus giganteus ocydromus, Gould.

South-Western Australia from Geraldton in the north to the south coast and eastward to Esperance. Odd individuals have been seen as far inland as Southern Cross. Still fairly common near Perth.

The type locality is Swan River.

Macropus giganteus melanops, Gould.

South-Western Australia. The only specimen in the Museum came from the neighbourhood of Mt. Barker.

The type locality is "Port Essington," which is obviously incorrect.

Macropus rufus occidentalis, Cahn.

This "plain kangaroo" inhabits the interior of the southern portion of the State, taking the place of *M.g. ocydromus*. Near Geraldton it approaches the coast, and to the north the boundary is indefinite. On the plains of the Gascoyne River the blue phase ♂♂ and ♀♀ are much more in evidence, suggesting that this is the type locality of Rothschild's *M. dissimulatus*.

The type locality is "Murchison River."

Macropus rufus pallidus, Schwarz.

North-West of W.A. from the Robe River in the west to the Shaw River in the east. Specimens have been obtained at the coast near Cossack. The southern limit is not known.

The type locality is Shaw River.

Macropus antilopinus, Gould.

This kangaroo has been obtained in the valley of the Negri River, East Kimberley, a specimen from that locality being in the W.A. Museum.

The type locality is Port Essington, Coburg Peninsula, Northern Territory.

Macropus robustus erubescens, Sclater.

South-Eastern part of the State north of Eucla.

The type locality is "Lake Hope, 200 miles in the interior from Port Augusta."

Macropus robustus cervinus, Thos.

"The Murchison and the Gascoyne," south to Waddouring, an inland form which does not reach the coast.

The type locality is "Pinda Station, Yalgoo."

Macropus robustus rubens, Schwarz.

North-West of the State from the valley of the Ashburton in the west to that of the Shaw River in the east.

The type locality, Box Soak, Shaw River.

Macropus robustus isabellinus, Gould.

Barrow Island, north of Onslow. The type skin was collected on Barrow Island by Captain J. L. Stokes; the animal was re-discovered by Mr. J. T. Tunney in 1900.

Macropus robustus woodwardi, Thomas.

Kimberley District extending to the extreme north and to the country near Wyndham (Parry's Creek) in the east.

The type locality is Grant Range near the Fitzroy River.*

Macropus robustus bracteator, Thos.

East Kimberley.

Type locality, McClintock Range, south-west of Hall's Creek.

Macropus (Wallabia) agilis aurescens, Schwarz.

West Kimberley, valley of the Fitzroy River. In the swamps and jungles near the river.

The co-types are from Fitzroy River and Grant Range, West Kimberley.

Macropus (Wallabia) agilis nigrescens, Lönnb.

West Kimberley, Dampier land.

The type locality is in the vicinity of Broome, where the animals were found close to the sea beach.

* Note.—This animal does not occur on the Murchison as stated by LeSouef and Burrell, p. 185.

Macropus (Wallabia) irma, Jourdan.

South-Western Australia, from the vicinity of Geraldton in the north to the south coast. The eastern limit is approximately the No. 3 Rabbit-proof Fence. Still common near Perth.

Macropus (Thylogale) dama, Gould.

South-Western Australia, from the Moore River in the north to the south coast (Cape Leeuwin and Cape Arid), inland to the Great Southern Railway.

The type locality is Moore River.

Macropus (Thylogale) houtmanni, Gould.

Houtman's Abrolhos, off Geraldton (East and West Wallabi Islands).

Macropus (Thylogale) derbianus, Gray.

Garden Island, off Fremantle.

Macropus (Thylogale) eugenii, Desm.

Islands in the Recherche Archipelago, off the South Coast (North Twin Peak Island and Middle Island).

The type locality is St. Peter Island, in the Nuyts Archipelago, South Australia, where the animal is now extinct.

Setonix brachyurus, Q. & G.

South-Western Australia, from the Moore River to the South Coast; also occurs on Rottnest, Bald Island (east of Two People's Bay). Still abundant in suitable swampy localities.

The type was found dead on the sandhills at King George's Sound.